

What Is Claimed Is:

1. A remote copy network system having a first storage system and a second storage system, including a first edge device coupled to the first storage system, a second edge device coupled to the second storage system, the first edge device and the second edge device being coupled by a network, wherein:

the first edge device receives a remote copy I/O request to copy data to the second storage system from the first storage system;

the first edge device sends a response to the received remote copy I/O request to the first storage system;

after sending a response to the remote copy I/O request, the first edge device sends to the second edge device log information having the remote copy I/O request and a sequential number indicating the order of reception of the remote copy I/O request; and

the second edge device extracts the remote copy I/O request from the received log information, and sends the extracted remote copy I/O request to the second storage system according to the order indicated by the sequential number in the log information.

2. The remote copy network system according to Claim 1 wherein:

the first storage system includes a first volume, the first storage system is identified by first storage

identification information and the first volume is identified by first volume identification information;

the second storage system includes a second volume, the second storage system is identified by second storage identification information and the second volume is identified by second volume identification information;

first virtual storage identification information having the same value as the second storage identification information and second virtual volume identification information having the same value as the second volume identification information are assigned to the first edge device;

second virtual storage identification information having the same value as the first storage identification information and second virtual volume identification information having the same value as the first volume identification information are assigned to the second edge device; and

the first edge device receives a remote copy I/O request from the first storage system, with the first storage identification information and the first volume identification information as the sending source identification information and with the second storage identification information and the second volume identification information as the sending destination identification information, and sends log information having the remote copy I/O request to the second edge device.

3. The remote copy network system according to Claim 1 wherein:

the first storage system comprises a first volume, the first storage system is identified by first storage identification information and the first volume is identified by first volume identification information;

the second storage system comprises a second volume, the second storage system is identified by second storage identification information and the second volume is identified by second volume identification information;

first virtual storage identification information and first virtual volume identification information are assigned to the first edge device; and

the first edge device receives a remote copy I/O request from the first storage system, with the first storage identification information and the first volume identification information as the sending source identification information and with the first virtual storage identification information and the first virtual volume identification information as the sending destination identification information, converts the sending destination into the second storage identification information and the second volume information, and sends log information having the converted I/O request to the second edge device.

4. The remote copy network system according to Claim 1 further comprising at least one core device which relays log

information sent from the first edge device to the second edge device.

5. The remote copy network system according to Claim 4 wherein the first edge device, the second edge device, and the core device are router devices.

6. The remote copy network system according to Claim 1 wherein the first edge device stores log information sent to the second edge device, and upon receiving a response to the log information from the second edge device, deletes the stored log information.

7. The remote copy network system according to Claim 6 wherein when log information sent to the second edge device is not received by the second edge device, the first edge device resends stored log information to the second edge device.

8. The remote copy network system according to Claim 6 further comprising:

a management network coupled to the first edge device and to the second edge device; and

a management server coupled to the management network, wherein:

the log information further includes information indicating a time at which the remote copy I/O request from the first edge device was received;

the first edge device, upon receiving a response to the log information from the second edge device, records in memory a delay time calculated by comparing the time information in

the log information corresponding to the response and the current time;

the first edge device sends the delay time recorded in the memory to the management server via the management network; and

the management server outputs the delay time.

9. The remote copy network system according to Claim 1 further comprising:

a third edge device coupled to each of a third storage system and a fourth storage system, wherein:

the first edge device receives a remote copy I/O request for remote copying data from the third storage system to the fourth storage system; and

the first edge device distinguishes a remote copy I/O request received from the first storage system and a remote copy I/O request received from the third storage system to perform processing.

10. The remote copy network system according to Claim 1 further comprising:

a management network coupled to the first edge device and to the second edge device; and

a management server coupled to the management network, and wherein:

the management server receives pair information indicating that the first storage system is a source of remote copying and that the second storage system is a remote copying

destination corresponding to the first storage system, and distributes the received pair information, via the management network, to the first edge device and to the second edge device.

11. A relay device, coupled to a first storage system which relays a remote copy of data from the first storage system to a second storage system, comprising:

a first interface coupled to the first storage system;

a second interface coupled to another relay device via a network, wherein the other relay device is coupled to the second storage system;

a processor; and

a memory; wherein:

the first interface receives a remote copy I/O request for remote copying data from the first storage system to the second storage system, and returns a response to the remote copy I/O request to the first storage system;

the processor creates and stores in the memory log information having a remote copy I/O request and a sequential number indicating the order of reception of the remote copy I/O request;

the second interface portion, after returning a response to the remote copy I/O request, sends the created log information to the other relay device;

the second interface portion receives a response to the log information; and

the processor deletes from the memory the log information corresponding to the received response.

12. The relay device according to Claim 11 wherein when the second interface portion does not receive a response to the log information, the second interface portion resends the log information stored in the memory.

13. The relay device according to Claim 11 further including a third interface coupled to a management server via a network, wherein:

the log information further comprises information indicating the time at which the first interface portion received the remote copy I/O request; and

when the second interface portion receives a response to the log information,

the processor calculates the delay time by subtracting the time information in the log information corresponding to the response, from the time at which the response was received; and

the third interface portion sends the delay time to the management server.

14. The relay device according to Claim 11 further comprising a third interface coupled to a management server, wherein:

first virtual storage identification information and first virtual volume information are assigned to the relay device; and

the third interface portion receives, from the management server, pair information taking the first virtual storage identification information and the first virtual volume information to be the sending destination information for remote copying, and taking the first storage identification information which is the first storage system identification information and the first volume identification information which is the first volume identification information of the first storage system to be the sending source information for remote copying.

15. The relay device according to Claim 14 wherein:

the first virtual storage identification information has the same value as the second storage identification information, which is the identification information of the second storage device system; and

the first virtual volume information has the same value as the second volume identification information, which is the identification information of the second volume of the second storage device system.

16. The relay device according to Claim 14 wherein:

a remote copy I/O request received by the first interface portion includes the first storage identification information and the first volume identification information as the sending source information, as well as the first virtual storage information and the first virtual volume information as the sending destination information; and

the processor converts the information of the sending destination to the second storage identification information which is the identification information of the second storage system, and converts the second volume identification information which is the identification information of the second volume of the second storage system, and creates log information having the converted remote copy I/O request.

17. A relay device, coupled to a second storage system, wherein the relay device relays remote copy data from a first storage system to the second storage system, comprising:

a first interface portion, coupled to another relay device via a network, wherein the other relay device is coupled to the first storage system;

a second interface, coupled to the second storage system;
and

a processor, and wherein

the first interface portion receives, from the other relay device, log information having a remote copy I/O request for remote copying data from the first storage system to the second storage system and a sequential number indicating the order of reception at the other relay device of the remote copy I/O request;

the processor acquires the remote copy I/O request from the received log information; and,

the second interface portion sends the acquired remote copy I/O request, in the order of the sequential number

comprised in the log information, to the second storage system.

18. The relay device according to Claim 17 further comprising a third interface coupled to a management server, wherein:

second virtual storage identification information and second virtual volume information are assigned to the relay device; and

the third interface portion receives, from the management server, pair information taking the second virtual storage identification information and the second virtual volume information to be the sending source information for remote copying, and taking the second storage identification information which is the identification information of the second storage system and second volume identification information which is the identification information of the second volume of the second storage system to be the sending destination information for remote copying.

19. The relay device according to Claim 18 wherein:

the second virtual storage identification information has the same value as the first storage identification information which is the identification information of the first storage system; and

the second virtual volume identification information has the same value as the first volume identification information

which is the identification information of the first volume of the first storage system.

20. The relay device according to Claim 18 wherein:

the remote copy I/O request within log information received by the first interface comprises the first storage identification information and the first volume identification information as the sending source information and the second storage information and the second volume information as the sending destination information;

the processor acquires the remote copy I/O request within the received log information and converts the sending source information into the second virtual storage identification information and the second virtual volume identification information; and,

the second interface portion sends the converted remote copy I/O request to the second storage system.